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10/823,283

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Tremitchell L. Wright

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WHIRLPOOL PATENTS COMPANY - MD 0750

500 RENAISSANCE DRIVE - SUITE 102

ST. JOSEPH, MI 49085

EXAMINER

YAKULIS, JEFFREY C

ART UNIT

PAPER NUMBER

1753

MAIL DATE

DELIVERY MODE

09/05/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/823,283

Applicant(s)

WRIGHT ET AL.

Examiner

Jeff Yakulis

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/18/2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10-26 and 33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-26 and 33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 2, 8, 10, 11, 13, 16, 17, 18, 26, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Von Broemsen (6,821,398) in view of Price et al. (2003/0213503).

Regarding claim 1, Von Broembson teaches: a first metallic plate, a last metallic plate and a plurality of intermediate metallic plates (col. 5 lines 11-16 and figure 2 show a first and last electrode; col. 5 lines 40-43 discuss a plurality of plates that make up each electrode), each of said plates having two essentially parallel sides (figure 2A shows plates having parallel sides) with a large surface area in comparison with a peripheral side connecting said parallel sides (does not specifically state this but this is simply the general nature of a plate) said plurality of plates arranged with one of said

Art Unit: 1753

parallel sides of one plate facing one of said parallel sides of an adjacent plate, for each of said plurality of intermediate plates (figure 2A demonstrates this), a connection between a positive electrode of a source of direct electrical current and said first plate and a connection between a negative electrode of said source of direct electrical current and said last plate (col. 4 lines 51-64, figure 2 shows the electrodes items 40 and 42, refer to col. 5 lines 11-16 as to why only 2 electrodes are shown), an inlet to allow the introduction of a fluid containing a chemical composition to be decomposed by said cell device during a period of decomposition (col. 4 lines 30-41, item 28 inlet pipe) and an outlet to allow the dispensing of the resultants of the decomposition of said chemical composition (col. 4 lines 30-41, item 18 delivery pipe, also refer to col. 7 lines 67 and col. 8 lines 1-5).

Von Broemson fails to disclose a sensing system provided within the cavity of an automatic cleaning appliance is configured to measure properties of wash liquor in the cavity of the automatic cleaning appliance and control dispensing of the chemical composition into the automatic cleaning appliance based on the measurement.

Price et al. teaches a method for improving the cleaning capability of an automatic dishwasher by including an electrochemical cell for producing electrolyzed water providing a with the capability to provide a bleaching species to the wash liquor (abstract). Price et al teaches an electrochemical device generating a chemical composition (paragraph 17) and a sensing system provided within a cavity of the automatic cleaning appliance configured to measure properties of the wash liquor in the cavity of the automatic cleaning appliance (paragraph 38, paragraph 226, notes the

Art Unit: 1753

sensor can be within the automatic dishwashing appliance [200]) and controlling dispensing of the chemical composition into the automatic cleaning appliance based on the measurement (paragraph 217). Price et al. teaches the signal-sensing system can be used to activate or deactivate at any specific time during washing cycle based on the sensed conditions or for any other need identified by the consumer allowing for more control in the production of the chemical composition providing for a more controlled cleaning cycle for the user (paragraph 58, 66).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the signal sensing system utilized to measure chemical characteristics of a wash liquor as done in the automatic cleaning appliance including an electrochemical cell of Price et al. and include it in the electrochemical chlorinator taught by Von Broemson as it would allow for accurate control of the production of chemicals in the wash liquor by the electrochemical cell allowing for more control over the composition of the wash liquor.

Regarding claim 2, Von Broembson teaches said plurality of plates are arranged in a straight line (refer to figure 2A).

Regarding claim 8, Von Broembson teaches said fluid containing a chemical composition comprises water and said resultants comprises hydrogen and oxygen (col. 7 lines 65 and col. 8 lines 1-5, hypochlorite NaOCl).

Regarding claim 10, Von Broembson teaches said fluid containing a chemical composition comprises water and a dissolved salt and said resultants comprise at least chlorine (col. 7 lines 65 and col. 8 lines 1-5, hypochlorite NaOCl).

Art Unit: 1753

Regarding claim 11, Von Broembson teaches a storage space provided in said device arranged to receive a supply of a salt composition in solid form to be dissolved by water obtained from a source of water in said appliance to be used in said cleaning of objects (col. 4 lines 65-67 and col. 5 lines 1-2).

Regarding claim 13, Von Broembson teaches said positive electrode connection at said first plate and said negative electrode connection at said last plate comprise the sole direct electrical connections between said source of direct electrical current and said plates. (col. 4 lines 51-54 and col. 5 lines 49-63 shows that only the end electrodes are directly connected; the rest of the plates are connected via current connector tabs).

Regarding claim 16, Von Broembson teaches said fluid comprises an electrolyte and said plates are arranged in an electrical series connection with said electrolyte providing an electrical connection between adjacent plates (col. 5 lines 25-27 the electrodes function as plates in this connection, the electrolyte fluid is the same as instant application so its status as an electrolyte is inherent; Also, note col. 7 lines 48-53 as to why electrodes are arranged in stacks and then connected in series).

Regarding claim 17, Von Broembson teaches said fluid containing a chemical composition comprises water obtained from a source of water in said appliance to be used in said cleaning of objects, and including a filter upstream of said plates (col. 4 lines 30-41 filter is item 16; water is not specifically used for cleaning of objects but since the chlorinator produces hypochlorite, a known bleach, it could inherently clean objects).

Regarding claim 18, Von Broembsen teaches a filter comprising a water softener mechanism (col. 4 lines 65-67 and col. 5 line 1; dispenser can add water softener grade salt to water).

With regard to claim 26, no further structural limitations are recited, therefore the claim continues to read on the device Von Broembsen. The manner of operating a device does not differentiate an apparatus claim from the prior art. A recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus if the prior art apparatus teaches all the structure limitations of the claim. See MPEP 2114.

Regarding claim 33, Price et al. teaches sensors including: a water hardness sensor, pH sensor, conductivity sensor, and turbidity sensor (paragraph 38).

4. Claims 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Von Broembsen (6,821,398) and Price et al. (2003/0213503) as applied to claim 1 above and further in view of Bentley (6,716,325).

Regarding claim 22, modified Von Broembsen teaches the previous limitations set forth in claim 1 aforementioned above. Modified Von Broembsen fails to disclose: a back-washing mechanism arranged to remove materials deposited onto said plates during said period of decomposition.

Bentley is relevant because it is directed to an electrolytic cell for generation of hypochlorite. Bentley teaches including a back-washing mechanism arranged to remove materials deposited onto said plates during said period of decomposition (col. 1 lines 41-47). Bentley further notes hypochlorite generators have the tendency to form

Art Unit: 1753

calcareous and magnesium deposits on the cathode and can become inefficient as a result (col. 1 lines 41-47).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a back-washing mechanism of Bentley in the hypochlorite generator taught by Von Broembsen in order to solve the problem of deposits forming on the cathode and thus increasing overall efficiency.

Regarding claim 23, Bentley teaches back-washing via a chemical technique (col. 1 lines 41-47; hydrochloric acid in this case).

Regarding claim 24, Bentley teaches back-washing via a thermal technique (col. 1 lines 41-47; **dilute** hydrochloric acid, mixing acid and water generates heat: a thermal technique).

Regarding claim 25, Bentley teaches back-washing via a mechanical technique (col. 1 lines 41-47; high flow rates around the cathode can mechanically could mechanically remove deposits).

5. Claims 14, 15, 19, and 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Von Broembsen (6,821,398) and Price et al. (2003/0213503) as applied to claim 1 above and further in view of Grannersberger (6,391,167).

Regarding claim 14, modified Von Broembsen teaches the previous limitations set forth in claim 1 aforementioned above. Modified Von Broembsen fails to disclose: a source of direct electrical current comprises a source of rectified alternating current.

Grannersberger is relevant because it is directed toward an electrolytic water chlorinator. Grannersberger teaches a source of direct electrical current comprising a

Art Unit: 1753

source of rectified alternating current (col. 3 lines 54-67 input bridge item 102 provides for the rectification). Grannersberger further notes that the input bridge provides for low heat generation and surge protection (col. 3 lines 65-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an input bridge [102] of Grannersberger into the electrolytic chlorinator of modified Von Broembsen because it solves the problem overheating and provides for surge protection necessary for protecting the electrical components from damage (col. 3 lines 65-67).

Regarding claim 15, modified Von Broembsen teaches the previous limitations set forth in claim 1 aforementioned above. Modified Von Broembsen fails to disclose: a source of direct electrical current comprises a source of inverted alternating.

Grannersberger is relevant because it is directed toward an electrolytic water chlorinator. Grannersberger teaches a source of direct electrical current comprises a source of inverted alternating current (col. 3 lines 54-67 input bridge item 102). The inverter switching topology comes in the form a field effect transistor (FET) half bridge rectifier (col. 3 lines 55-56). Though not specifically stated the inverted current is inherent in this transistor design. Grannersberger notes that the input bridge provides for low heat generation and surge protection (col. 3 lines 65-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an input bridge [102] of Grannersberger into the electrolytic chlorinator of modified Von Broembsen because it solves the problem overheating and

Art Unit: 1753

provides for surge protection necessary in protecting the electrical components from damage (col. 3 lines 65-67).

Regarding claim 19 and 20, Von Broembsen teaches the previous limitations set forth in claim 1 aforementioned above. Von Broembsen fails to disclose: a control arranged to monitor voltage between the first and last plate and a control arranged to monitor current flowing through the electrodes.

Grannersberger is relevant because it is directed toward an electrolytic water chlorinator. Grannersberger teaches a control arranged to monitor a voltage across said first and last plates and a control arranged to regulate an electrical current flowing through the electrodes (col. 4 lines 1-8; switch mode controller [105]). Grannersberger notes this device allows for salt overload immunity and improved chlorine output stability (col. 4 lines 1-8). It further would have been beneficial because the device includes a current limiting function, which protects the cell from becoming damaged under short circuit conditions (col. 4 lines 1-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the switch mode controller [105] of Grannersberger to the electrolytic chlorinator of Von Broembsen in order to prevent overloading salt, allow for improved chlorine output stability, and prevent damage to the cell (col. 4 lines 1-8).

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Von Broembsen (6,821,398) and Price et al. (2003/0213503) as applied to claim 1 and further in view of Hamand (6,513,180).

Regarding claim 4, modified Von Broembsen teaches the previous limitations set forth in claim 1 aforementioned above. Modified Von Broembsen fails to disclose: the automatic cleaning appliance is a fabric washing machine.

Hamand is relevant because it deals with a bleach generating device using an electrolytic cell (col. 4 lines 1-3). The electrochemical bleach generating device is arranged within a washing machine (col. 2 lines 12-26). Hamand notes the advantage of not having to add bleach manually during operation (col. 2 lines 12-26).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a bleach generator of modified Von Broembsen into the washing machine design of Hamand in order to make practical use of the cell of modified Von Broembsen and that one would have a reasonable expectation of success in applying the cell as such.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Von Broembsen (6,821,398), Price et al. (2003/0213503), and Hamand (6,513,180) as applied to claim 4 above, and further in view of Wiegand (2,917,685).

Modified Von Broembsen teaches all the structure with regards to claim 4, but fails to disclose the source of direct electrical current comprising a source of rectified alternating current and where the electrical components providing the rectified current are arranged to be cooled with water from the washing machine.

Wiegand is relevant because it solves the problem of cooling electrical components. Wiegand teaches cooling electrical components with water (col. 2 lines 26-29) and specifically rectifier systems (col. 2 lines 48-51). Wiegand also notes that it is

Art Unit: 1753

well known that rectifiers are needed to be kept as cool as possible to prevent their destruction (col. 3 lines 31-34).

It would have been obvious of one of ordinary skill in the art at the time the invention was made to utilize a device similar to Wiegand's in modified Von Broembsen because it solves the problem associated with overheating of electrical components. Since this device is being utilized in a washing machine it would have been obvious to obtain from the nearest available source and thus using water from the washing machine itself.

8. Claims 12 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Von Broembsen Patent No. 6,821,398 and Price et al. (2003/0213503) as applied to claims 1 and 10 above and further in view of Sicilano Patent No. 6,125,481.

Regarding claim 12, modified Von Broembsen teaches the previous limitations set forth in claim 1 and 10 aforementioned above. Modified Von Broembsen fails to disclose: a lockout mechanism for the appliance and an activating apparatus for the lockout mechanism, the activating apparatus including a sensor arranged to detect a concentration level of chlorine.

Sicilano is relevant because it solves the problem of being able to control the amount of chlorine delivered to a body of water. Sicilano teaches a lockout mechanism for said appliance and an activating apparatus for said lockout mechanism, said activating apparatus including a sensor arranged to detect the level of said chlorine (col. 5 lines 53-63 and figure 3; LED light and controller act as the "lockout mechanism").

Art Unit: 1753

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the lockout mechanism and sensor device disclosed by Sicilano into the device set forth by modified Von Broembsen because it is known that excessive chlorination can be detrimental as a skin and eye irritant and thus would eliminate the problem associated with excessive chlorination.

Regarding claim 21, Von Broembsen teaches the previous limitations set forth in claim 1 aforementioned above, but fails to disclose a control arranged to monitor a pressure change between the inlet and outlet.

Sicilano is relevant because it solves the problem of monitoring pressure between an inlet and an outlet in a chlorination system. Sicilano teaches a control arranged to monitor the pressure change between an inlet and outlet (col. 2, lines 10-12 and col. 5 lines 19-39; notice one pressure sensor is located upstream and another downstream).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the pressure monitoring device of Sicilano to accurately control and monitor pressure between the inlet and outlet of the electrolytic chlorinator of modified Von Broembsen.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Von Broembsen Patent No. 6,821,398 Price et al. (2003/0213503) as applied to claim 1 and further in view of Ahmed et al. Patent No. 5,076,952.

Art Unit: 1753

Modified Von Broembsen teaches the previous limitations set forth in claim 1 aforementioned above. Modified Von Broembsen fails to disclose: said automatic cleaning appliance is a foodware washing machine.

Ahmed et al. is relevant because it is directed toward a bleaching system in dishwashers. Ahmed et al. notes chlorine releasing agents are beneficial in cleaning (col. 2 line 26-27). It is also noted that the most difficult food soils to remove are proteinaceous soils (col. 2 lines 37-44). Ahmed et al. further teaches that an appropriate concentration of sodium hypochlorite bleach is useful in removing proteinaceous soils (col. 2 lines 48-52).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to attempt to use a device similar to modified Von Broembson's in the washing machine discussed by Ahmed because it is known that sodium hypochlorite bleach is useful in removing proteinaceous soils from dishware.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Von Broembsen (6,821,398), Price et al. (2003/0213503), Ahmed et al. (5,076,952) as applied to claim 6 above, and further in view of Wiegand (2,917,685).

Modified Von Broembsen teaches all the limitations of claim 6 above, but fails to disclose a source of direct electrical current comprises a source of rectified alternating current and where the electrical components providing the rectified current are arranged to be cooled with water used in the washing machine.

Wiegand is relevant because it solves the problem of cooling electrical components. Wiegand teaches cooling electrical components with water (col. 2 lines 26-

Art Unit: 1753

29) and specifically rectifier systems (col. 2 lines 48-51). Wiegand also notes that it is well known that rectifiers are needed to be kept as cool as possible to prevent destruction (col. 3 lines 31-34).

It would have been obvious of one of ordinary skill in the art at the time the invention was made to utilize the water cooling device of Wiegand's into the electrolytic chlorinator of modified Von Broembsen because it solves the problem associated with overheating of electrical components. Since this device is being utilized in a foodware washing machine it would have been obvious to obtain from the nearest available source and thus using water from the foodware washing machine

11. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Von Broembsen Patent No. 6,821,398 and Price et al. (2003/0213503) as applied to claim 1 above and further in view of Ofenloch (4,599,158).

Modified Von Broembsen teaches the previous limitations set forth in claim 1 aforementioned above. Modified Von Broembsen fails to disclose: the plurality of plates are arranged in an arc.

Ofenloch is relevant because it is directed to an electrolytic apparatus for the electrolysis of water. Ofenloch teaches two ways of increasing the rate of production of gases in an electrolytic cell one being allowing the ions to move more freely in solution (col. 1 lines 37-41). Ofenloch says one way to increase the movement of ions is to introduce an oscillating magnetic field (col. 1 lines 42-46). It is then noted one way to take advantage of this is to arrange the electrodes perpendicular to the magnetic field (col. 1 lines 60-64; note figure 1 for the arrangement of the electrodes). This

Art Unit: 1753

arrangement is essentially arc-like with electrodes surrounding a center point and going around 360 degrees.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ an electrode design similar to Ofenloch to the electrolytic chlorinator of modified Von Broembsen in order to take advantage of increased production rate of gases.

Response to Arguments

Claim Objections

With regards to the objection of claim 9, due to amendment the objection is withdrawn.

Claim Rejections under 35 U.S.C §112

With regards to the rejections under 35 U.S.C. §112 to claims 1-26, due to amendments/arguments the rejection is withdrawn.

Art Rejections

Applicant's arguments with respect to claims 1-8, 10, 26, and 33 have been considered but are moot in view of the new ground(s) of rejection necessitated by amendment.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 1753

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Yakulis whose telephone number is 571-272-9807. The examiner can normally be reached on M-F 7:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1753

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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SUPERVISORY PATENT EXAMINER